



Arizona Health Care Cost Containment System  
Committed to excellence in health care

# Quality Assurance Symposium

AHCCCS Presenters:  
Dan Lippert  
Manager  
Applications Development  
(602) 417-4277

Stacy Westerholm  
Manager  
Test / Infrastructure  
(602) 417-4712

# Quality Assurance Symposium AHCCCS

## ■ Agenda

- Quality Assurance as defined by the Capability Maturity Model (CMM)
  - What
  - Why
- Arizona Experience
- Lessons Learned

# Quality Assurance Symposium AHCCCS

## ■ What is CMM?

- Framework that describes five (5) levels of maturity within the software process
- Each maturity level within CMM is divided into Key Process Areas (KPAs)
- Evolutionary improvement path from an ad hoc, immature organization to a mature, disciplined organization
- CMM provides the framework. Each organization determines how to meet the criteria of the framework

# Quality Assurance Symposium AHCCCS

## ■ CMM Premise

- Quality of a software product is determined by the quality of the process used to develop and maintain it
- Effective software process ties together people, tools and methods into an integrated whole

# Quality Assurance Symposium AHCCCS

## ■ CMM Focus

- Capability of organizations to produce high-quality products consistently and predictably
- Inherent ability of process to produce planned results
- Process as a means to empower the people doing the work

# Quality Assurance Symposium

## AHCCCS

### ■ CMM Benefits

- Creates a shared vision of software process improvement within an organization
- Establishes a common language for the software process
- Defines a set of priorities for addressing software issues
- Supports measurement of the process by providing a framework for reliable, consistent assessments

# Quality Assurance Symposium AHCCCS

## ■ Five (5) Levels of Maturity

- **Initial:** Adhoc, chaotic, unstable
- **Repeatable:** Policies for managing software projects and procedures to implement the policies are established
- **Defined:** Standard processes for developing / maintaining software are documented and used across the organization
- **Managed:** Organization has set quantitative quality goals for software products and processes
- **Optimized:** Entire organization is focused on continuous process improvement

# Quality Assurance Symposium

## AHCCCS

### ■ Key Process Area

- Cluster of related activities that, when performed collectively, achieve a set of goals considered to be important for establishing process capability
- Reside at a single maturity level
- Identified as the principle building blocks:
  - To help determine the capability of an organization
  - To understand the improvements needed to advance to a higher maturity level



# Quality Assurance Symposium AHCCCS

- Achieving Level 2: Repeatable
  - Development of Policies to meet the goals of the KPAs
    - Requirements Management
    - Software Project Planning
    - Software Project Tracking and Oversight
    - Software Subcontract Management
    - Software Quality Assurance (SQA)
    - Software Configuration Management (SCM)

# Quality Assurance Symposium AHCCCS

## ■ Need for a Quality Program

- Increased complexity of the software
- Expanded scope of software projects
- Doubled Customer Support
  - State of Arizona
  - State of Hawaii



# Quality Assurance Symposium AHCCCS

- Mainframe Environment
  - PMMIS / HPMMIS
    - 13 Sub-systems
  - 5 Development Teams
  - Integrated Testing Team
    - Dedicated Test Environment

## Quality Assurance Symposium AHCCCS

- Estimated 2005 Application Changes
  - Number of Service Requests: 1290
  - Number of Components: 6600



## Quality Assurance Symposium AHCCCS

### ■ What We Have Done in Arizona

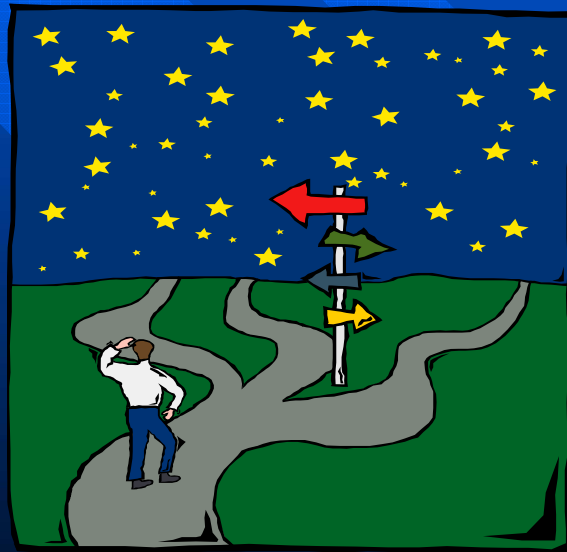
- We have a set of methods and tools used to produce software products
- We have used CMM guidelines to help us standardize these methods and tools
- We continue to institutionalize the use of the methods and tools
- We continue to improve our processes

# Quality Assurance Symposium AHCCCS

- Step 1: Identify a Quality Vision
  - Provide a standard expectation and measurement for all Customers
  - Develop and implement a measurable, manageable and cost-effective approach to software development
  - Render quality the responsibility of everyone

# Quality Assurance Symposium AHCCCS

- Step 2: Define a Quality Program
  - Management system of the functions, processes and activities necessary to:
    - Provide quality software end products
    - Satisfy user requirements



# Quality Assurance Symposium AHCCCS

## ■ Step 2 (continued)

- Influence the level of quality in all department work product(s) including:
  - Establishing requirements for the quality of the product
  - Establishing and enforcing procedures to develop and maintain the software
  - Establishing and implementing procedures to evaluate the compliance of the product as well as those functions, processes and activities affecting the quality of the product



# Quality Assurance Symposium AHCCCS

- Step 3: Secure the Foundation
  - Management commitment at all levels
  - Acceptance of a Quality Program as a management tool



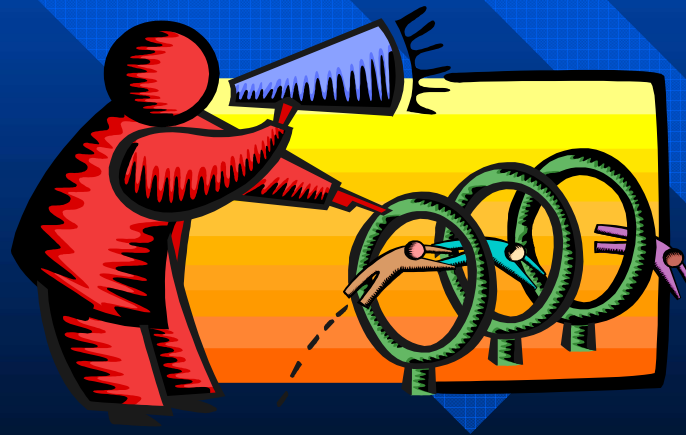
# Quality Assurance Symposium AHCCCS

## ■ Step 4: Evaluation (Gap Analysis)

- In place:
  - Methodology for the SDLC
  - Programming Standards
  - Processes, Plans and Procedures
    - Project Planning and Tracking
    - Software Development - requirements, design, documentation
    - Release Management

# Quality Assurance Symposium AHCCCS

- Step 5: Major Issues to Address
  - Continuity between project teams
  - Institutionalize processes and procedures
  - Centralize change control
  - Maximize visibility into Projects
  - Manage risks



## Quality Assurance Symposium AHCCCS

### ■ Step 6: Meeting Level 2 Criteria

- Established Change Control Board to manage all changes to Software work products
- Developed / implemented Project Estimating Tool
- Ensured processes and procedures encompassed all areas of the SDLC
- Developed / implemented SQA and SCM Audits

## Quality Assurance Symposium AHCCCS

### ■ Step 6: (continued)

- Developed standards for annual KPA reviews
- Established Core Project Team
- Established SSR Review Team
- Provided training on processes / procedures

# Quality Assurance Symposium AHCCCS

## ■ Step 6: (continued)

- Created secure repository for the Process Assets (PAs)
- Identified / implemented measurements
- Implemented integrated testing
- Increased visibility into projects



# Quality Assurance Symposium

## AHCCCS

### ■ Steps for Success

- Dedicate staff to implement CMM standards
- Dedicate Project Managers for key projects
- Implement Change Management
- Formalize status reporting processes (expected progress vs. actual, current risks, barriers to success, milestone achievement)
- Educate division-wide

# Quality Assurance Symposium AHCCCS

## ■ In a Nutshell

- Develop a set of methods and tools to produce software products
- Standardize the methods and tools using the CMM guidelines
- Institutionalize the use of the methods and tools
- Improve the methods and tools



# Quality Assurance Symposium AHCCCS

## ■ Lessons Learned

- Communicate, communicate, communicate
- Institutionalization of new processes takes time
- Pre-assessment review
- Change Management is key
- If it isn't audited, it won't get done
- Customer/Staff Involvement is critical

# Quality Assurance Symposium AHCCCS

## ■ Bottom Line

- It takes time, skill, and money to improve the software process
- But most of all, it takes

## COMMITMENT

- **All** the time!
- **Everyday**, in spite of workloads, deadlines, and pressure!